

*ENVIRONMENTAL ASSESSMENT
OF THE
OPERATION AND MAINTENANCE
OF*

HODGES VILLAGE DAM

FRENCH RIVER

OXFORD, MASSACHUSETTS

Prepared by



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Preface

The purpose of this Environmental Assessment is to provide the basis for evaluation of the environmental impact on the project area due to the routine operation and maintenance of this flood control reservoir. Hodges Village Dam has been operated whenever necessary since it was constructed to prevent or reduce downstream flooding. Maintenance and management of the project, including the recreation facilities, during non-flood periods is also of primary importance. Enhancement of the fish and wildlife resources as well as protection of the environment within and around the reservoir area has been given careful consideration.

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I. PROJECT DESCRIPTION

A. Introduction

1. Location and Authorization

Hodges Village Dam is located in south-central Massachusetts in the upper Thames River Basin. This basin terminates in the tidal estuary known as the Thames River and encompasses the eastern third of Connecticut. The Quinebaug River subbasin drains over 50 percent of the Thames River Basin and covers predominantly its eastern half. Part of this subbasin, formed by the French River and the upper Quinebaug, extends into the southeastern corner of Hampden County, Massachusetts. Hodges Village Dam is on the French River 15 miles above its confluence with the Quinebaug, 0.9 miles west northwest of the center of Oxford, and about 5 miles north of the center of Webster, Massachusetts. There is no permanent pool impounded by the dam. The entire flood encroachment area is in the town of Oxford.

The dam, dike and reservoir are elements of the flood protection plan for the Thames River Basin which was approved by the Flood Control Act of August 18, 1941 (Public Law No. 228, 77th Congress, 1st Session). The development and use of reservoirs for public recreation and other purposes is authorized by the Flood Control Act of 1944 (Public Law 534, 78th Congress, 2nd Session), as amended. Hodges Village Dam was completed in October 1959, at a cost of \$4,425,000.

2. Purpose

The Corps of Engineers' comprehensive flood control plan for the

Thames River Basin consists of six active reservoirs and one local protection project. As part of this program, the operation of Hodges Village Dam provides flood protection primarily to Webster, Massachusetts, and also to small towns downstream along the French River to Putnam, Connecticut. The optimum flood control is provided by coordination of the operation of this dam with nearby Buffumville Dam. The project also offers recreational opportunities compatible with the primary function of flood control.

B. Structures and Reservoir

1. Dam and Appurtenant Structures

Hodges Village Dam is an earth and rock fill embankment with a concrete ogee spillway section and four earth dikes with a maximum height of 520 feet msl. The earth and rock fill section is 2050 feet long with a maximum height of 55 feet. The earth dikes, totalling 2660 feet in length, are necessary for closing saddles in the reservoir perimeter. On top of the dam is a paved access road.

The overflow concrete spillway is 125 feet long with a crest elevation of 501.0 feet msl. It is situated at the west end of the dam. Two gated rectangular conduits in the dam with inverts at elevation 465.5 feet msl comprise the outlet works of the dam. Two electrically operated slide gates control the flow through the outlet works. The approach channel is excavated in rock and has a bottom width of about ten feet. This reservoir has no permanent recreation pool.

NOTE: Delineation of streams on map is limited to major streams or to those having existing project or current study

LEGEND

- RESERVOIR
- CHANNEL IMPROVEMENT
- NAVIGATION PROJECT
- HURRICANE BARRIER

NOTE:
All projects completed unless otherwise noted.

THAMES RIVER BASIN
Massachusetts, Rhode Island & Connecticut

SCALE IN MILES

4 0 4 8

 RESERVOIR
 CHANNEL IMPROVEMENT
 NAVIGATION PROJECT
 HURRICANE BARRIER

All projects completed
unless otherwise noted.

**Massachusetts,
Rhode Island & Connecticut**

4 0 4

2. Reservoir

Hodges Village Dam, if filled to spillway crest, would create a reservoir with a storage capacity of 13,250 acre-feet, which is equivalent to 8.0 inches of runoff from a drainage area of 31.1 square miles. The reservoir's maximum water surface would cover 740 acres with a maximum depth of 36 feet and would extend about 3 miles upstream on the French River.

3. Real Estate

The Hodges Village project area is comprised of 264 acres in flowage easement and 874 acres acquired in fee for the necessary permanent structures, borrow areas, roads and all lands below a taking line of 504 feet msl.

Fee owned land is divided into three zones: 89 acres for project operations; 109 acres in two parcels, Greenbriar and Rocky Hill, leased to the town of Oxford for recreation purposes; and 676 acres licensed to the Commonwealth of Massachusetts, Department of Fisheries, Wildlife and Recreational Vehicles, for wildlife management and game stocking.

Except for a large gravel mining operation, a well field used by the town of Oxford and a few recreation facilities, the property is undeveloped woodland, meadow and wetland. The reservoir area was not cleared of vegetation during dam construction except for 15 acres for borrow area.

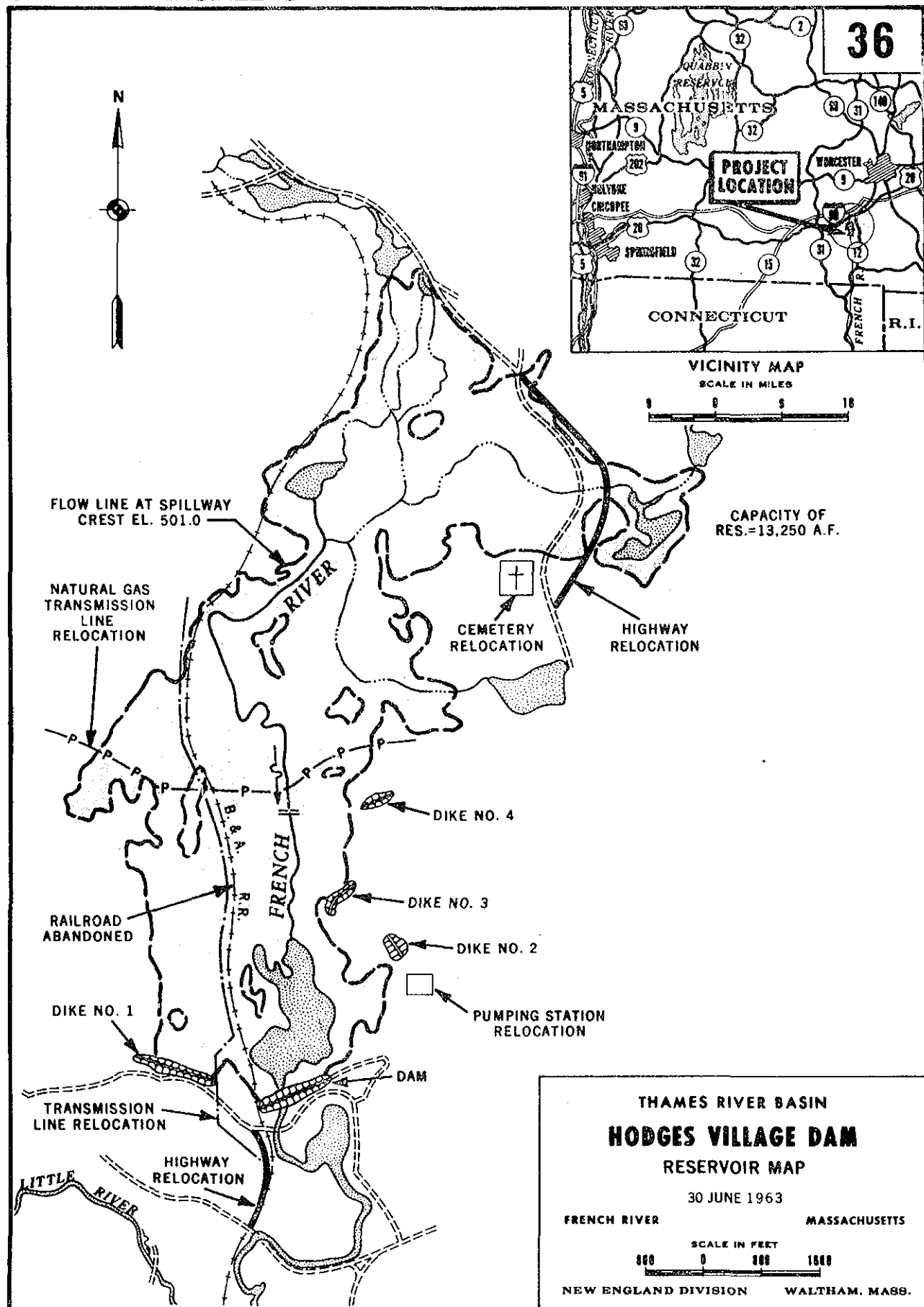
C. Operation Procedures

Buffumville and Hodges Village Dams are operated as distinct parts of a single protection effort, particularly for the towns of Webster and Oxford. Coordination of regulation at all 6 dams in the Thames River Basin provides maximum flood protection. As part of the flood control program in the basin, rainfall reports and snow surveys are made periodically to alert the Reservoir Control Center (RCC) at the Corps' New England Division Headquarters. Reporting networks have been established in cooperation with the National Weather Service, the U.S. Geological Survey, and local authorities. Reports from network stations are received weekly during non-flood periods, daily during storm periods and as often as every three hours during severe storms. Because of rapid runoff in the basin, the emphasis has been on river stage recording stations especially at damage centers downstream of reservoirs, in order to provide prompt information on flood conditions.

II. ENVIRONMENTAL SETTING

A. Climate and Precipitation

The Thames River Basin, including the Quinebaug River subbasin and Hodges Village Reservoir has a variable climate characterized by frequent but short periods of heavy precipitation. The basin lies in the path of the "prevailing westerlies" and cyclonic disturbances that cross the country from the west or southwest to the east or northeast. The basin is also occasionally exposed to coastal storms, which usually



originate in the mid-Atlantic States and may be of hurricane intensity.

The average annual temperature in the upper Quinebaug subbasin is about 48°F. The southern part of the watershed has a generally milder climate than the northern part, due to the moderating influence of Long Island Sound. Average monthly temperatures range from about 70°F in July and August to about 27°F in January and February. Air temperatures sometimes reach 100°F in summer and infrequently fall to less than -10°F in winter.

The average annual precipitation over the Thames River Basin is about 44 inches, and approximately two inches less in Webster, Massachusetts, about 5 miles south of the dam. During 64 years of record, snowfall at Worcester, Massachusetts, about 10-1/2 miles northeast of Buffumville Dam, has averaged 56.5 inches, while Putnam, Connecticut, about 14 miles south of the dam receives about one foot less snowfall on the average. For the Thames River basin as a whole, the average annual runoff is 22.5 inches (1.64 cfs per square mile), or just over 50 percent of the average annual precipitation.

B. Topography

The French River is formed by small brooks in the area of Leicester, Massachusetts, and flows southward to Hodges Village, the location of the Hodges Village Dam. The Hodges Village Dam controls the runoff from a drainage area of 31.1 square miles. During spring runoff, the river usually rises moderately, and the summer flow is well sustained by rainfall and ground water. Because of the generally

hilly topography, runoff is fairly rapid throughout the Thames River Basin. The French River has a total fall of 618 feet along a total length of 28 miles. Within the reservoir area the average gradient is about 8 feet per mile, much of the reservoir being a large swampy lowland.

Hilly terrain with moderate relief surrounds the reservoir. Above Hodges Village Reservoir, the French River flows through a generally narrow valley with a narrow flood plain flanked by high, steep-sided hills. Within and below the reservoir, the valley widens and is partly lined with terraces. Parts of the flood plain in this area are swampy. When filled to capacity, the reservoir would inundate two ponds, and large areas of marsh and swamp. Elevations in the vicinity of the reservoirs range from about 470 feet msl in the stream-bed at the base of Hodges Village Dam to about 840 feet msl on Taft Hill south of Oxford overlooking the Hodges Village Reservoir.

C. Socio-Economic Conditions

The town of Oxford is still largely rural, with a large proportion of land in woodland and agriculture. Two woolen mills are the town's only manufacturing industries. The town is encouraging the introduction of new industry by developing an industrial park. The town population declined between 1960 and 1970, from 6985 to 6109.

Webster is more industrialized, and many people from surrounding communities, as well as local residents, work there. Its industries and population are growing slightly as a result of the new Route 52.

The town's population was 12,072 in 1960 and 12,432 in 1970. The major industries and employers in Webster are Anglo Fabrics (a woolen mill), B & W Shoe Company, Elegant Yarn Company, and Cranston Print Works. Only a very small fraction of the land in Webster is used for agriculture.

The town of Dudley, across the French River from Webster, is comprised mostly of residences of people who work in Southbridge and Webster. Dudley's population has grown from 6510 in 1960 to 8087 in 1970, primarily because of the prosperity of American Optical Company in Southbridge.

III. ENVIRONMENTAL IMPACT OF OPERATION, MAINTENANCE AND MANAGEMENT PROGRAM

A. Downstream Effects - Regulation of Flows and Releases

The flood of record in the Thames River Basin occurred in August, 1955. Caused by the torrential rains of Hurricane Diane, it produced damages of an estimated \$62 million with 8 lives lost. The Quinebaug subbasin incurred losses of \$37,420,000, of which \$32,600,000 occurred in Massachusetts. Damages in the French River basin amounted to \$15,220,000, much of which was centered in Webster.

The French River upstream of the reservoir has a fairly steep gradient, steep valley sides and tributaries conducive to rapid runoff and flooding. Therefore, Hodges Village Dam is in a good location to reduce flood damage to Webster and Oxford and is a significant benefit to those communities as well as others downstream on the French and Quinebaug Rivers. In a recurrence of the August, 1955 flood, the

Hodges Village project would prevent damages of \$15,500,000. The total amount of damage that this dam and Buffumville would prevent together is \$25,600,000. Since completion, the dam has been responsible for preventing estimated losses of \$2,862,000.

A flood in March, 1968 filled Hodges Village Reservoir to a stage of 23.4 feet, which is 43 percent of capacity.

B. Project Management

The Project Manager is responsible for the routine maintenance of the project area, including disposal of solid wastes, flood debris and litter. The town of Oxford is responsible for the operation and maintenance of the Rocky Hill and Greenbriar recreation areas.

Most of the reservoir area consists of undeveloped lands which are not actively managed for recreation or other purposes by the Corps of Engineers and which require only minimal maintenance. The Project Manager fertilizes mown grass, with most of the fertilizer being applied to the lawns immediately around the dam and maintenance buildings. Herbicides are used to kill weeds on the rock embankments and occasionally highly diluted Simazine is used in spot applications on individual plants. No other weed or brush control is undertaken at this project. In addition to the herbicide at Hodges Village, Malathion was used in the summer of 1974 against tent caterpillars and Japanese beetles.

C. Vegetation

About two-thirds of the land in the town of Oxford is wooded,

including about two-thirds of the project area. Most of the upland woods have a closed canopy with small to medium-sized trees indicating relatively recent regeneration from farmland. The upland woods occur on small, often steep-sided hills with well-drained, sandy soil. White pine and white oak predominate with smaller numbers of red oak in many areas and frequent pitch pine on the driest sites. Gray birch, quaking aspen, and scrub oak also occur in these woods. The wetlands are more varied in physical characteristics and in plant species composition. Red maples predominate in the wetlands and are accompanied by meadowsweet, black alder, speckled alder and other shrubs. Black willow, red maple, gray birch and redosier dogwood are the common woody plants along the river and stream banks. Major species of the marshes are cattail and tussock sedge. Redosier dogwood predominates in shrub swamps. The meadows and shrubby meadows occur on dry sandy soil and consist mostly of little bluestem, asters, goldenrods, milkweeds, meadowsweet, staghorn sumac, blackberries, sweet fern, small white pines and quaking aspen.

At present there is only limited forest management for wood production at the project, with current plans calling for selective cutting of white pine along an old railroad right-of-way. The south borrow area for Hodges Village was replanted with red pine, as was a strip of land accidentally excavated by the gravel pit operator as a result of a surveying error. The north borrow area beside dike #2 was not replanted and is growing back naturally to gray birch.

The area cleared around the dam was seeded to grass, which is mown along with the two fields north of the spillway.

The primary objective of flood control operations at Hodges Village Dam is to reduce flood stages at Webster, Massachusetts, and other downstream communities. The direct result is a decreased frequency of bank overflow downstream from the dam. The affected area along the French River from Hodges Village Dam to Webster is about two thirds flood plain and one third terrace. About one third of the affected area is woodland, divided about evenly between flood plain and terrace. The ecological effects of flood reduction by this dam are augmented by further flood reduction produced by Buffumville Dam. In effect, the dams have made the downstream flood plain ecologically narrower. There is now less ground surface area which floods periodically to inundate herbaceous plants and small woody seedlings.

Since Hodges Village Dam has no permanent pool, its construction has not caused large scale changes in ecosystems. The most noticeable change has been the death of trees due to flooding in a marsh near the north end of the flood impoundment area. Since the dead trunks are habitat for some wildlife, the tree deaths are not an ecological loss but rather a valuable source of habitat variety. Changes in the water table, if any, have had only a minor effect as there is no evidence of large-scale death of vegetation. The Hodges Village Reservoir is wide and very flat, and therefore floodwaters rise and recede slowly above the four-foot stage. Many little hills within the reservoir are above the flood encroachment line. About half of the reservoir

is swamp or marsh whose plants can tolerate the frequent and prolonged inundation which the Hodges Village Dam accentuates upstream. These wetlands are also the lowest areas within the reservoir and therefore are flooded most frequently. Slightly higher ground will be flooded less frequently, but since the stored flood waters will recede slowly in the reservoir, flood damage by oxygen starvation of plant roots is possible after large flooding events. The white pine which grows on the slightly higher ground is particularly susceptible to this kind of unavoidable damage. Once the reservoir is emptied, however, the ground should drain quickly, because the soil is sandy.

The effects of flooding on plants depend in part on the season of the flood. Late winter and early spring floods are less likely than summer floods to kill plants by oxygen starvation of the flooded roots, because the plants are dormant until early spring. This is probably the main reason that flooding has killed few or no trees at the reservoir, since all of the larger floods which have occurred in the last 15 years have occurred during the winter or spring months.

D. Fish and Wildlife

Since the vegetation in the Hodges Village Reservoir area is very diverse, the wildlife using the habitat is correspondingly diverse. The differences in habitat determine the distribution of various species and their uses of the local environment. For example, the marsh can support aquatic birds and mammals such as muskrat, vole, mice, small herons, rails and wetland songbirds. The shallow

waters along the French River at Hodges Village attract such surface feeders as black duck, wood duck and mallard. Upland areas contain fox, muskrat, raccoon and rabbits, as well as grouse, pheasant and quail.

The Massachusetts Division of Fisheries and Wildlife conducts stocking programs at the project under a 25-year lease from the Corps. Pheasant and hare are released annually at the site. Hodges Village receives about 500 pheasant and 100-150 hare. A wildlife management area is located on the west side of the French River north of the Hodges Village Dam. It extends along the abandoned railroad bed to about 1500 feet south of the intersection of the power line cut and the French River.

When natural flooding is reduced due to reservoir operations, some alteration of aquatic and terrestrial ecosystems will occur downstream. Artificially modified flood patterns below Hodges Village Dam have decreased the formerly flooded area. Wetlands, even temporary ones, are important to the life cycles and habits of many species of wildlife, waterfowl and fish. They promote insect production and diversity of vegetation which in turn supply food for a variety of fish and birds. Modification of these areas adversely affects the entire food chain of wildlife species from aquatic invertebrates to spawning fish. The reduced available aquatic and wetland habitat below the dam can lead to reduced numbers of aquatic and wetland animals. Those areas no longer flooded can become terrestrial wildlife habitat if protected from development by man.

To date the Hodges Village Dam project has had no major detrimental effects on the wildlife. However, the effect of flood storage on the area could be considerable if it occurs during the spring and early summer breeding and young-tending season. For example, during May and June, marsh-nesting birds are rearing young, and their energy expenditures are high. At this particular time, insectivorous birds are highly dependent on a steady insect population in marshes within the reservoir. Emerging aquatic insects are consumed by many birds as well as by mammals, reptiles, amphibians and other insects. Any unnatural change in water level could affect the breeding success of the marsh and swamp ecosystems. The absence of a permanent pool at Hodges Village is beneficial to wildlife, because it has allowed perpetuation of highly productive marshes and shrub swamps.

An average of 250 acres is flooded annually above the permanent pool. Every five years on the average, about 270 acres are flooded. The acreage is a rather large proportion of the reservoir land area, because the reservoir is wide and much of it is low-lying and flat. In times of flood, very young wildlife will be destroyed, but older animals capable of reproduction would have no trouble escaping the rising flood waters.

At the present time snowmobiles and other recreational vehicles are using the abandoned, unplowed and unmaintained town roads within the boundaries of reservoir property. The existing vehicle trails about the Massachusetts Fish and Game management area and traverse the

property in some places. The optimal wildlife habitat of the French River north of the Hodges Village Dam is also traversed by trails used by these vehicles.

E. Geology and Water Resources

The bedrock underlying the reservoir is chiefly granitic rocks and phyllites. Above the Hodges Village project area, the French River flows through a narrow valley with an occasionally narrow flood plain. Ravines are separated by flats containing ponds and wetlands. In and below the reservoir the valley is wider and is filled with ice-contact stratified drift and alluvium. The coarse-grained stratified drift is a good source of gravel and is being actively excavated by the town of Oxford and a private firm in two areas of flood easement.

The soil in the parts of the French River valley underlain by ice contact stratified drift is classified as well drained to excessively drained and somewhat poor in nutrients. The alluvium is well drained except for swamp deposits and small wetlands. The drier parts of the reservoir property were formerly farmland. The frequent scattered wetlands make much of the area unsuitable for intensive recreation development.

The French River is a Class B stream in the Hodges Village Reservoir area, however, it does not always meet the criteria. Class B waters are suitable for water contact recreation and are acceptable for public water supply with treatment and disinfection. Dissolved oxygen concentrations must not be less than 5 mg/l at any time nor less

than 75 percent saturated for more than 16 hours of any 24 hour period. Total coliform bacteria levels must not exceed an average value of 1000 colonies/100 ml nor more than 1000 colonies in 20 percent of the samples.

The New England Division has been periodically collecting water quality samples at Hodges Village Reservoir since 1971. The mean dissolved oxygen concentration of the inflow from the French River is 9.1 mg/l with no value being less than 5 mg/l. The mean dissolved oxygen concentration of the discharge water is 9.7 mg/l with only one value (4.6) below 5 mg/l.

Total coliform bacteria measurements at the project usually are taken only in the discharge waters because no water contact recreation is allowed in the reservoir area. The mean total coliform bacteria level is 3,500 colonies/100 ml; the values range from 70 to 15,000. The mean total coliform count was based on ten (10) analyses over a fifty one (51) month period.

Abnormal concentrations of total phosphates, nitrates and chemical oxygen demand (COD) are occasionally encountered.

Millbury Water Co., Millbury, Massachusetts, operates a well field within the reservoir area in the productive stratified drift. The wells yield a half million gallons per day of high quality water. There is a potential yield of over a million gallons per day more water for the town or other users. The aquifer which the town taps is the largest along the French River in the vicinity of the reservoir and is therefore a valuable resource.

Since no pool is maintained behind the dam except during flood control operations, no appreciable change in downstream water quality has been noted.

Flood control operations affect the productivity in the reservoir in a number of ways. Spring flooding at Hodges Village Reservoir has the potentially detrimental effect of decreasing the biological productivity in the wetlands by disrupting the reproduction of wetland species and stressing individuals.

The easement land for Hodges Village Reservoir includes two gravel mining operations. Although the Corps has no direct responsibility for the operation of the gravel pits, the excavations have unavoidable adverse effects on the reservoir, the immediately obvious effect being aesthetic. All vegetation is removed from the land surface before gravel mining begins in a particular spot. Without vegetation, there is no food or cover for animals and nothing to hold the sand and gravel slopes in place. Therefore, the affected hills are subject to an increased erosion rate. This condition is aggravated by the steep slopes which the pit operators leave. Sand will settle at the base of the excavated slope. However, a severe rainstorm over the reservoir could wash sand into the marshes, a stream and the French River near the gravel pits, causing a degradation in water quality, burying some marsh life, and altering the bottom characteristics of the stream and river. The noise of gravel mining machinery and transport vehicles is disturbing to some species of wildlife in nearby wetlands.

F. Recreation

The Corps of Engineers oversees the management of all of the reservoir lands except those areas leased to the town of Oxford and the Massachusetts Department of Fisheries, Wildlife and Recreational Vehicles. The town leases two sites totalling 109 acres on the east side of the French River for recreation purposes. The Department of Fisheries, Wildlife and Recreational Vehicles has a 25-year lease for the 676 acres which it manages for hunting and fishing and which is open for other forms of recreation.

Recreational use of Hodges Village Reservoir is necessarily subordinate to authorized flood control operations and occasionally is restricted as a result.

Flooding has the potential to interfere frequently with recreation at Hodges Village Reservoir, because much of its land is low and marshy and because it is open for recreation all year. Many of the trails are around the marshes, and four access roads to the reservoir must be closed every spring for about a week. The picnic area and playing fields are on moderately high ground, so that only a large flood occurring between late spring and mid-fall would be likely to interfere greatly with activities there.

The Corps is responsible for clean up operations throughout the project, except in the town-leased lands. Cleanup following a large storm and significant flood storage has in some cases required considerable time, during which recreational use may be restricted. Debris and damage to facilities can be rapidly removed or repaired.

However, the unsightly conditions of damaged vegetation, debris, mud, and silt which sometimes result from flood storage operations cannot be so easily corrected. Eventually vegetation will usually regenerate naturally and eliminate evidence of flood damage.

The most difficult aspect of managing public land for recreation is preventing abuse and resolving conflicts in use. At Hodges Village Reservoir the facilities used most intensively are the picnic area and playing fields supervised by the town of Oxford. However, the entire reservoir except for facilities associated with operation of the dam is open to the public, free of charge, and is used by recreational vehicles. Thus, it has been somewhat difficult to monitor recreational activities. The supervision of snowmobiles is expected to improve with the cooperation of the snowmobile club in Oxford. The only restriction to public access in the project area is the closing of low-lying roads when flooding is imminent.

Trail bike riding is also popular at this project and there is an extensive trail system. The bike riders have not all kept to the established trails but also ride in the fields and on the dikes, where they are not allowed. Such unrestricted use has the potential for destruction of vegetation and erosion of soil.

Vandalism of picnic facilities and entrance into unauthorized areas around the dams are also problems which are unavoidable consequences of public use development.

IV. ALTERNATIVES TO THE OPERATION, MAINTENANCE AND MANAGEMENT PROGRAM

A. Discontinuance of Authorized Flood Control Operation

If Hodges Village Dam ceased operation, there would be no artificial flood storage capacity in the French River branch of the Quinebaug River subbasin above the Little River, although there are water supply reservoirs, ponds and mill dams. Large floods would severely jeopardize the towns of Webster and Oxford and other downstream developments in the flood plain. Discontinuance of flood control is not economically sensible and would not be unless all development in the downstream flood prone areas were removed and future development prohibited. Since many communities, however, depend in various ways on proximity to the river for their economic stability, the need for the flood control dam will undoubtedly continue.

B. Land Management Alternatives

The Corps of Engineers' policy in managing its reservoirs is to allow for optimum public use consistent with flood control objectives. However, the various types of management programs suitable for a given project depend in part on such factors as: geographic location; topography; frequency, duration and extent of reservoir flooding; supply of and demand for various forms of land and water oriented recreation; and compatibility of different land and water uses with one another. These physical constraints will determine the suitability of an area for one use alone or for many coexisting uses which can be managed simultaneously.

Multiple purpose resource management has come to be accepted by all public agencies as a necessary response to the need for obtaining optimum use of public land. In view of the economic desirability of flood control, single-purpose management for any other purpose is considered unfeasible. However, Hodges Village Reservoir has natural resource and recreational values which would be wasted if the project were managed solely for flood control.

As the human population of south central Massachusetts grows, the demand for land and its various uses will increase. It is important to the residents of this area that the land be used wisely.

All land not used for picnic areas, recreation facilities and trails has been set aside for conservation and limited public use.

C. Operation and Maintenance Alternatives - Recreation

Section 4 of the 1944 Flood Control Act (Public Law 534, 78th Congress) authorized the construction, maintenance and operation of public park and recreational facilities at flood control reservoirs. Since that time part of the Corps' responsibility has been to make provisions for various recreational uses compatible with primary flood control objectives. The large numbers of visitors to the project (over 50,000 annually) indicates that the recreational opportunities offered are popular and needed. Therefore, the discontinuance of operation and maintenance of the recreational facilities would deprive users of recreational opportunities and probably create greater pressure and, perhaps, environmental stress on other public lands.

V. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT
AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

A. Introduction

Most flood control projects have been developed in response to an immediately perceived need to protect valuable land uses from harmful flooding. Usually the response has occurred after some critically damaging flood. In these cases, hindsight tells us exactly where and to what extent flood control is necessary.

B. Socio-Economic Effects

Communities along the French River experienced severe damages in the major flood of August, 1955. At that time, the Mansfield Hollow Dam on the Natchaug River at Mansfield Hollow, Connecticut, was the only Corps of Engineers flood control project in operation in the Thames River basin. Within ten years of the flood, the other five reservoirs in the Thames River basin comprehensive flood control system were constructed and operating. The rapid development of the reservoir network was based on the demonstrated need for flood protection.

The 1955 flood caused damages of an estimated \$62 million, with eight lives lost. The French River and the upper reaches of the Quinebaug River together accounted for almost 60 percent of the total loss in the Thames River Basin. About \$15,220,000 worth of damage occurred in the French River subbasin. In Webster, below Hodges Village Dam, flooding caused severe damage to industries, businesses and homes.

One dwelling and two businesses were destroyed and the four major industries in town lost stock and equipment. The Gas and Electric Company was put temporarily out of operation and later abandoned because of the high cost of repairing damage. The flood also damaged the sewage treatment plant so severely that a new one eventually had to be built. Damage to businesses and industries is particularly costly because, in addition to direct losses from flooding, jobs are lost or suspended, and the whole economy of the affected community suffers. The period of reconstruction creates hardships for families of the jobless, as well as for people who provide services to them. The town of Webster has industrial and commercial enterprises and residences in the French River flood plain. This past development eliminated natural flood storage areas, reduced the river's hydraulic efficiency, and resulted in construction directly in the path of floods. Yet such development has been economically beneficial to the town. Therefore, the flood protection offered by Hodges Village Dam may contribute to the town's continued economic stability and the region's long-term economic productivity.

The dams in the Thames River basin were designed to protect development already in the flood plain and not necessarily new construction. Unfortunately, communities below Hodges Village Dam have made few plans to limit further flood-plain development or otherwise regulate flood-plain use. Methods of long-term environmental planning are being developed to deal with the above problems.

C. Biological Communities and Ecosystems

The upstream effect of Hodges Village Reservoir has been to maintain biological productivity by restricting development of its woods and wetlands. The downstream effect of the dam could be a continuing loss in biological productivity if development is allowed in the flood plain. Land use regulations restricting flood-plain development could help to maintain and, perhaps also restore, the biological productivity and ecological diversity which have been forfeited for the unrestricted economic development of flood-prone lowlands. The Commonwealth of Massachusetts' Hatch Act is a constructive step in this direction.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES INVOLVED IN THE OPERATION AND MAINTENANCE PROGRAM

Because there is no permanent pool at Hodges Village, there has been little damage to vegetation from flooding. Flood-intolerant tree species in one marsh have died. Vegetation at higher elevations may be damaged or killed during or after storage operations for a large flood. An average of 250 acres or more will remain in a state of continual recovery from the effects of approximately annual flooding at Hodges Village Reservoir.

Wildlife within the reservoir area also may suffer from flood control operations. At the time of construction, most of the 1107-acre Hodges Village project was farmland, woodland or meadow and supported a variety of terrestrial animal species. Occasionally there may be some direct losses of wildlife from drowning due to

flood control operations. Large floods may also disrupt and disperse fish populations, their spawning, and their food sources.

VII. COORDINATION WITH OTHER AGENCIES

Coordination with various state and local interests resulted in valuable input to this assessment. Meetings and correspondence as well as reports, suggestions, and research data proved to be very helpful. The following is a list of the several interests with whom coordination took place:

Massachusetts Department of Fisheries, Wildlife and Recreational
Vehicles

Division of Fisheries and Wildlife

Town of Webster

U.S. Department of Interior

Bureau of Outdoor Recreation

Geological Survey

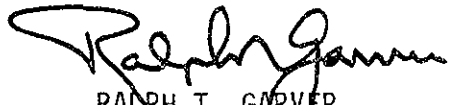
Upon evaluating the material presented in this Environmental Assessment, it is my belief that continued operation, maintenance and management of the Hodges Village Dam Flood Control Project is in the best public interest. To discontinue operation of this project could cause serious flooding downstream of the dam with significant property damage. Public recreation opportunities provided at the project would also be lost if management of the area ceased.

Environmentally, the operation, maintenance and management of Hodges Village Dam has only a minor impact. The downstream aquatic and terrestrial ecosystems have been altered somewhat due to reduced natural flooding. Impoundment of flood waters in the reservoir has minimal effects of fish reproduction, wildlife habitat and vegetation since the duration of inundation is usually rather short and often at non-critical times of year.

Therefore, since the environmental impacts of continued operation, maintenance and management of the Hodges Village Dam Flood Control Reservoir are minor, a formal environmental statement is not required under the provisions of the National Environmental Policy Act of 1969.

It is my opinion that the public will best be served by continuing operation of Hodges Village Dam.

1 Nov 76
(date)


RALPH T. GARVER
Colonel, Corps of Engineers
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